

Looking beyond the EU

## Biosafety South Africa

So far only three countries in Africa are cultivating genetically modified crops. To shed some light on the biosafety-related activities that are carried out in South Africa, the major African biotech country, we have a look at the national Biosafety South Africa platform.



**Dr. Anita Burger** is the Project Manager of Biosafety South Africa.

**Biosafety South Africa** is a platform within the national Technology Innovation Agency, which is an initiative of the national Department of Science and Technology. BSA is an independent national authority and service provider for all regulatory and biosafety issues related to biotechnological products.

### The cultivation and research & development of GM crops in South Africa:

13 GM crops are approved for commercial release: 8 GM cotton lines, 4 GM maize lines and 1 GM soybean line.

These crops were developed by Monsanto, Syngenta and Delta & Pine Land.

Research is carried out on insect-resistant and herbicide-tolerant cotton, insect-resistant potatoes, virus-resistant and drought-tolerant maize, fungal-resistant and virus-resistant grapevine, starch-enhanced cassava and sugarcane with

**GMO Safety:** How is the situation in South Africa different from the situation in the EU when it comes to genetically modified (GM) crops?

**Anita Burger:** Here in South Africa one main issue is the possible impact on export markets if GM crops are cultivated; in Europe it is more the import or cultivation of GMOs that is contentious. So the difference is between what's dictated from the outside and what are internal choices. Then there is the contrast between more affluent and poorer countries, in particular the contrast between "commercial" and "small-scale" farmers. Here in South Africa basic needs tend to have priority in people's minds. Another big difference is that farming in South Africa is not as heavily subsidised as in the EU; farmers therefore quickly adopt beneficial technologies to be more competitive.

**GMO Safety:** If farmers adopt these technologies so quickly, do all farmers do alike?

**Anita Burger:** In terms of acreage, large-scale farmers dominate in the cultivation of GM crops, i.e. the level of adoption by small-scale farmers is difficult to ascertain since the sector is highly fragmented. However, the technology benefits commercial and resource-poor farmers alike. Nevertheless, environmental influences and different farming practices obviously introduce variations over seasons and between farmers. But farmers have the choice of adoption GMOs or not, therefore the wide adoption of the technology by farmers is a fair indication of the benefits they derive.

**GMO Safety:** But is it necessary to use GM crops to reap these benefits?

**Anita Burger:** South Africa does not consider genetic engineering as the only solution but as part of a holistic approach. Insect-resistant crops do however offer a way to address the substantial losses in yield and income due to insects – without the negative environmental impact of general .

**GMO Safety:** Is this technology an issue in the public debate like it is in other countries?

**Anita Burger:** It is not really an issue, although a few anti-GM NGOs keep the debate alive. Over 90 percent of South Africans have no knowledge on the subject or are indifferent and GM maize is a widely consumed staple food. The issues brought up by minority groups primarily relate to food safety and the socio-economic impact of GM crops, as well as the role of multinational companies. GM issues are also mixed into other debates with the intention to help sway an

higher yields and enhanced sugar content.

These new GM crops are being developed by national and international seed companies, South African research institutions and collaborative projects between academic institutions and industry.

#### **The benefits of cultivating GM maize and GM cotton in South Africa:**

BSA reports that Bt maize hybrids yielded 31% more than the corresponding conventional hybrids and 134% more than conventional open-pollinated varieties planted by some small-scale farmers.

Smallholders who cultivated GM cotton, experienced yield increases of 11% and average benefits of 35 US\$/ha; on irrigated land average benefits were even 117 US\$/ha.

#### **The consumption and labelling of GM food in South Africa:**

Since 2001 GM maize is planted in South Africa and consumed directly as staple food.

In the past 10 years 10m tons of GM maize have been planted and consumed regularly by more than 40m people.

GM maize is not segregated from non-GM maize, which only constitutes about 30% of all maize.

A recent amendment to the Consumer's Protection Act makes it mandatory to label foods which contain ingredients or components derived from GMOs. This proposal is not about food safety (no "need to know"), but it provides consumers with the autonomy of choice (a "right to know").

argument, e.g. when land ownership is mixed with an "anti-big company and their GM products" argument. Apart from that, the South African GMO regulatory framework makes provision for public participation during the evaluation of GM crops.

**GMO Safety:** This is also where Biosafety South Africa (BSA) comes in? Or what is your task?

**Anita Burger:** We are an independent national authority and service provider of choice for all regulatory and biosafety issues related to biotechnological products. It is our aim to support the South African Genetically Modified Organisms Act, i.e. to promote the responsible development, production, use and application of GMOs, to help realise the potential benefits of GM crops, but also to limit possible harmful consequences. We also support South African developers of GMOs to get safe, sustainable products through the complex and costly regulatory system.

**GMO Safety:** When you say you support developers of GMOs to get their product regulated, what do you mean?

**Anita Burger:** One of the problems we have here in South Africa is what is referred to as the "innovation chasm" or the "valley of death" between research & development and commercialisation. In this context the huge costs that needs to be incurred for the development and approval of marketable GM crops are not the only obstacle for the developers; also the capacity and the know-how to put a new crop through the regulatory process is an issue. This is where we help.

**GMO Safety:** And what else do you do?

**Anita Burger:** We provide assistance to all stakeholders to help ensure compliance with the regulatory and biosafety requirements of GMO research and development. We also disseminate information related to the biosafety and risk assessment of GMOs, we commission strategic biosafety research, we facilitate regulatory compliance projects, and we do capacity building in biosafety research and assessment by training researchers and decision makers. We also leverage additional funds for biosafety research.

**GMO Safety:** Do you also engage directly with the public at large?

**Anita Burger:** In South Africa we have a programme on the Public Understanding of Biotechnology. However, since acceptance of innovative products such as GMOs is highly dependent of a receptive and appreciative society, for which an informative and participatory approach is imperative, we feel that BSA has a role to play in the public communication of biosafety aspects of GMOs.

**GMO Safety:** You said you would also commission biosafety research. What kind of research is currently being carried out in South Africa? And what of this is on your behalf or who else is funding such studies?

**Anita Burger:** There are a variety of projects, from research into food and health, over environmental biosafety research or post-release monitoring to socio-economic impact assessments. We are currently funding five strategic biosafety research projects, which are describe on our website. Other projects are directly funded by the government, by collaborative projects like the South Africa-Norway Biosafety Cooperation or other international funding agencies like the Rockefeller

Foundation. For the projects that are funded by us, we publish abstracts of the proposal as well as of the final report on our website.

**GMO Safety:** You mentioned socio-economic impact assessments. Why do you do these and what do they cover?

**Anita Burger:** The South African regulatory framework requires a socio-economic assessment of a new GM crop line before it will be considered and approved for commercial release. In these assessments issues such as international trade, sustainable livelihoods and possible social impacts are considered.

**GMO Safety:** And of the work that relates more specifically to biosafety issues, are there any GM crops on the market or in the pipeline that are of particular concern for biodiversity?

**Anita Burger:** Currently there are no crops on the market where the potential for gene-flow to wild relatives exists. But under contained conditions there are GMOs in development where this is possible, e.g. sorghum. However, this possibility is among the many aspects carefully considered by the regulatory authorities during the various stages of approval of a GMO. Furthermore, there is also a provision in the environmental legislation where the presence of wild relatives of a GM crop may trigger an explicit environmental impact assessment before the release of such an GMO will be considered.

**GMO Safety:** Thank you for talking to us.

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